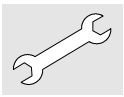

Chapter 3.6

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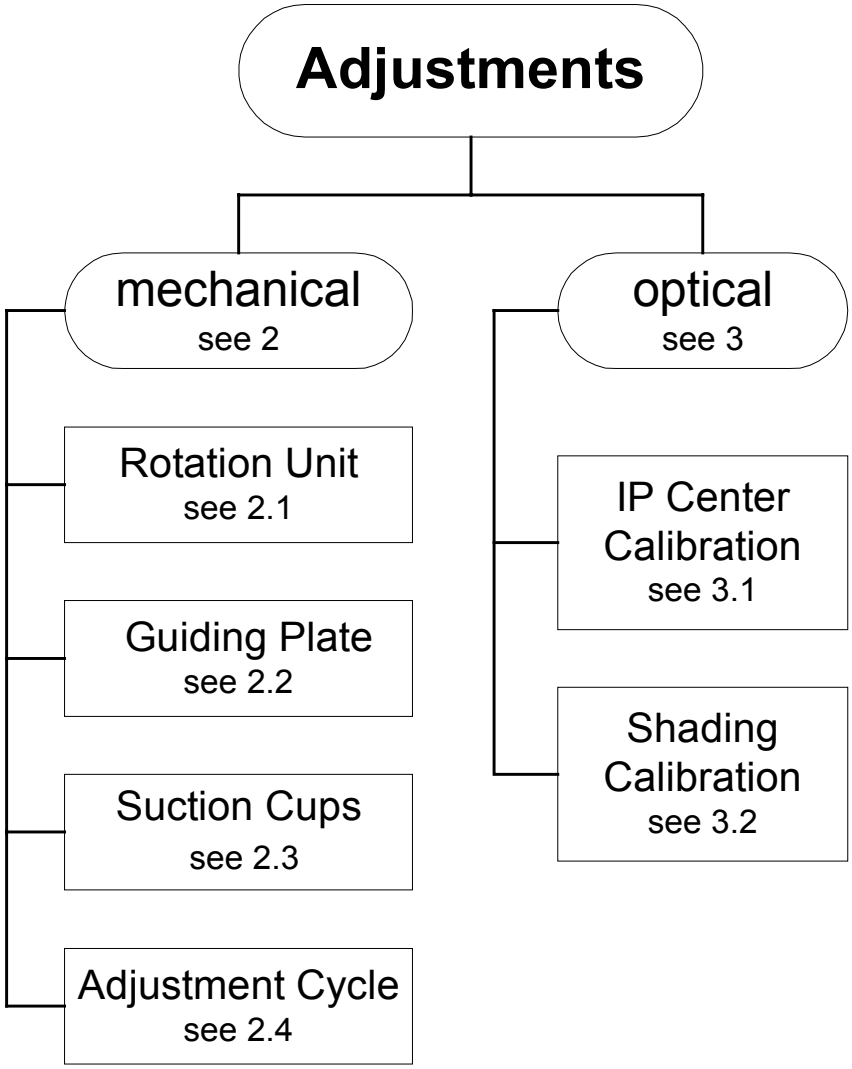
1 Overview of possible Adjustments



2 Mechanical Adjustments

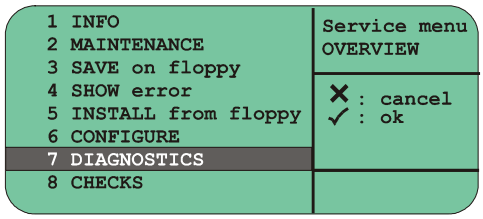
2.1 Adjustment of Rotation Unit

For orientation the two modules of the Cassette Unit are marked with stickers “Module 1” and “Module 2” on the front side. Adjustment needs to be done if the light barrier flag is misadjusted and as a result the suction cups do not suck the IP properly.

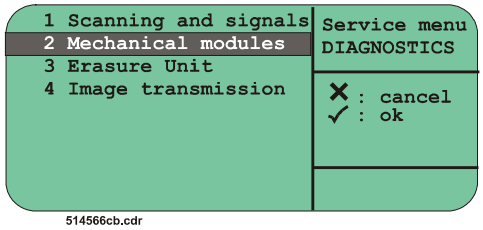
The rotation unit turns around very fast! Watch your head and hands!

(1) Enter the Service menu

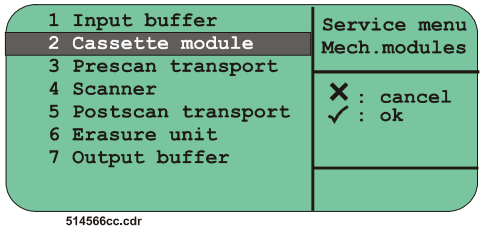
(2) Select
<7 DIAGNOSTICS>



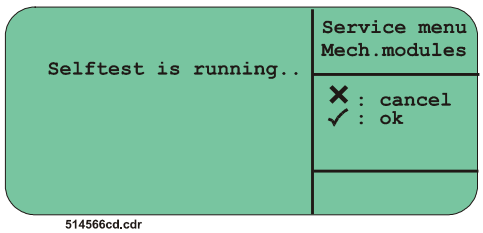
(3) Select
<2 Mechanical modules>



(4) Select
<2 Cassette module >



(5) **<Selftest is running..>** is shown at the display and the Diagnose Software starts



(6) Check if an error occurred

(7) Quit by pressing the confirm key ✓

(8) Press the confirm key ✓
to bring the Cassette Module 1 in input position

(9) Adjust flag position: To adjust the position of cassette module **1** move the light barrier flag mounted on cassette module **2** and vice versa (see Figure 3)

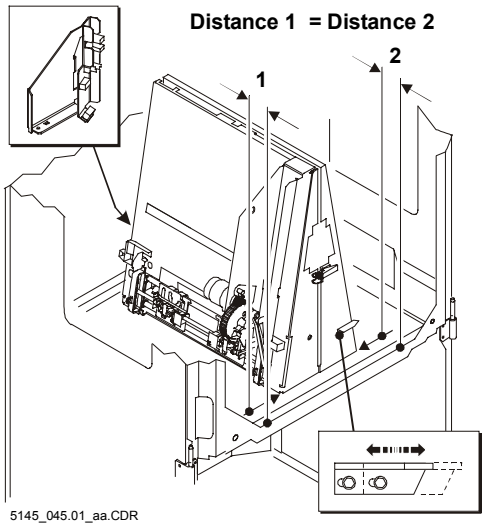


Figure 1

(10) Start a Selftest again

(11) Check if an error occurred:
If yes, redo the procedure as long as there is an adjustment error.
If not, press the confirm key ✓

(12) Redo the adjustment procedure (steps (1) to (11)) for Cassette Module 2

2.2 Adjustment of the Guiding Plate in Postscan Unit

2.2.1 General

If a guiding plate is not in perfect position the IP may be misguided. The robot carriage cannot insert the IP in the cassette correctly.

Error message 22D60: “Cassette jam occurred during output in output buffer”

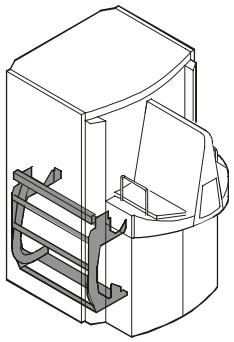


Figure 2

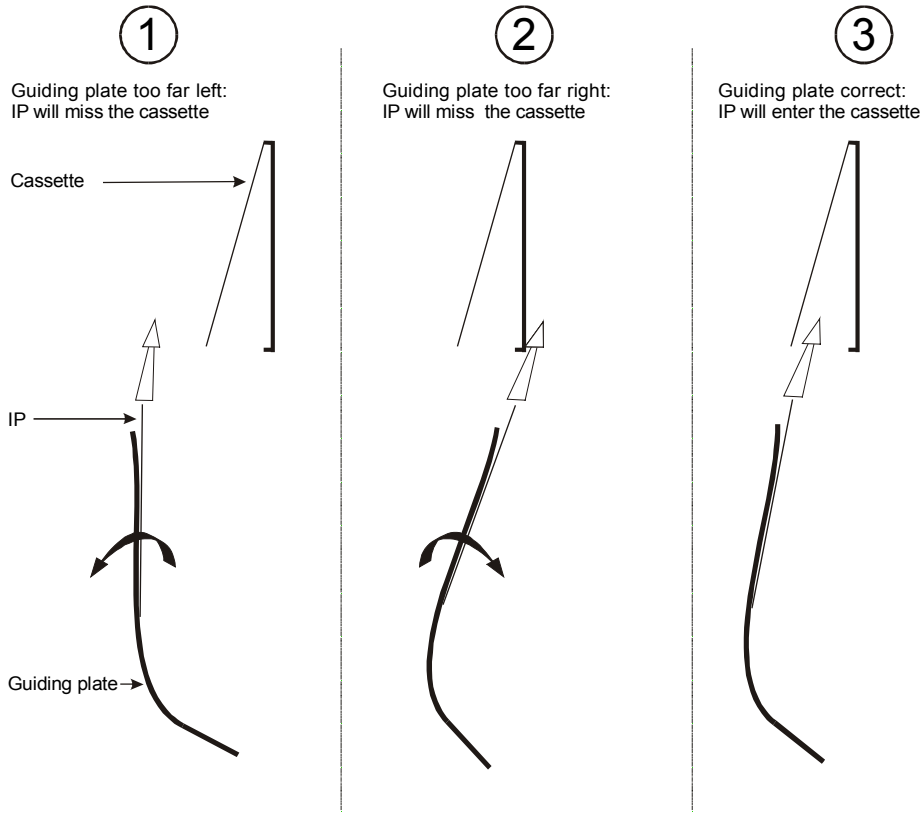


Figure 3

2.2.2 Adjustment Procedure

(1) Take the transport unit out of the digitizer

(2) Loosen the screws that hold the guiding plate

(3) Put the suction cups of the robot carriage in upward position

(4) Move the robot carriage manually upwards to the top

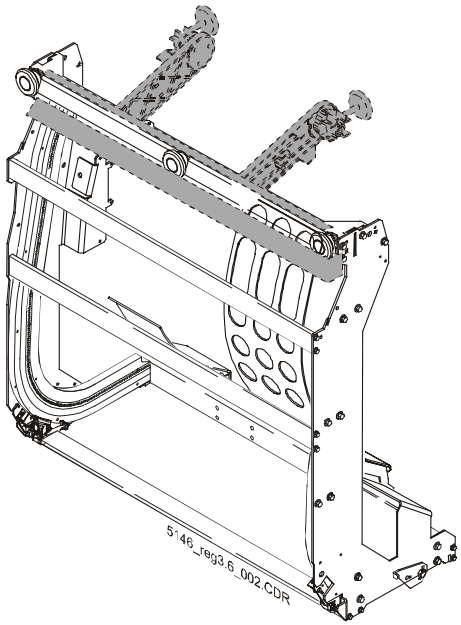


Figure 4

(5) During the last 10 cm of the upward movement the space between the white plastic gearwheel and the guiding plate has to be examined

(6) While the robot carriage is being moved to the very top the plastic gear wheel comes very close to the guiding plate

(7) When the plastic gear wheel reaches the closest point to the guiding plate, the space should not exceed 1 or 2 mm

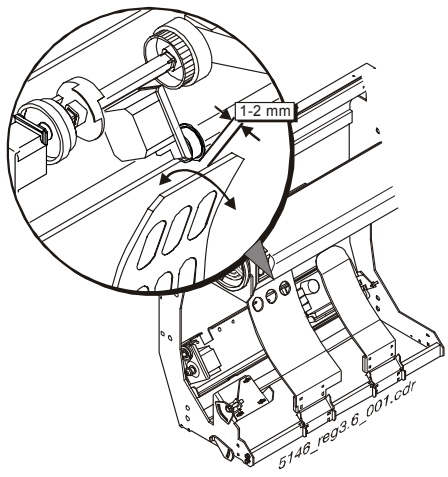


Figure 5

(8) If the guiding plate touches the plastic gear wheel, touch the bottom ledge of the guiding plate and move the guiding plate away from the plastic gear wheel

(9) If the space between guiding plate and plastic gear wheel is more than 2 mm, touch the bottom ledge of the guiding plate and move the guiding plate towards the plastic gear wheel

(10) When the perfect space is reached (1 or 2 mm), fix one screw at the front of the ledge and check the distance again

(11) If the space is different to 1 or 2 mm, readjust the guiding plate

(12) Repeat readjustment until the screws are fixed and the perfect space is reached

(13) Move the IP transport unit back in its work position

2.3 Adjustment of Suction Cups

Problems with insufficient vacuum at the image plate can be caused by non parallel suction cups. To check if the suction cups are parallel, work out the following steps:

(1) Take the transport unit out of the digitizer

(2) The robot needs to be in lowest position at the transport unit and in horizontal alignment.

(3) Check if the rib of the suction cup holder of the **input** robot corresponds with the **upper** recess of the suction arm

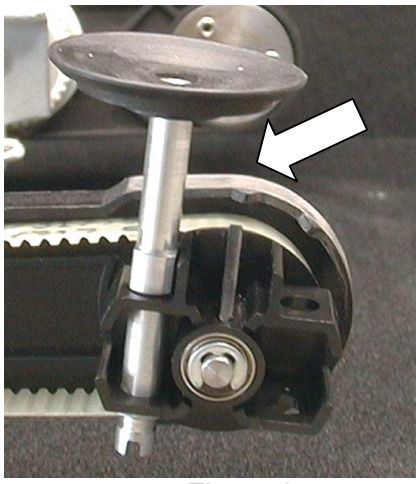


Figure 6

(4) Check if the rib of the suction cup holder of the **output** robot corresponds with the **lower** recess of the suction arm

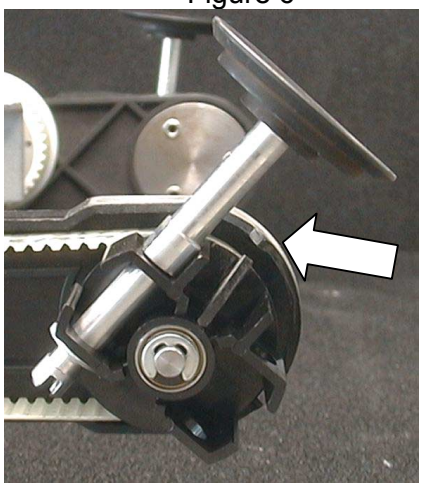


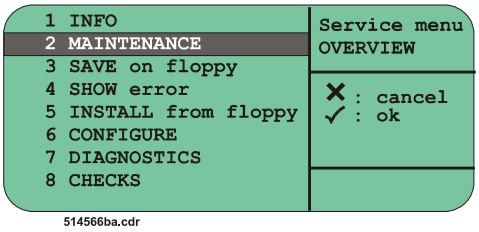
Figure 7

2.4 Adjustment Cycle of Transport Robot

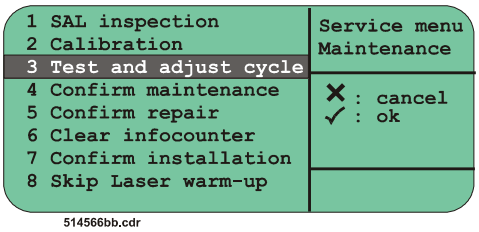
These actions of the digitizer follow after the command:
Handle: no scan, no erasure, no transmission
Circle without scan: scanning, no erasure, no transmission

(1) Enter the Service menu

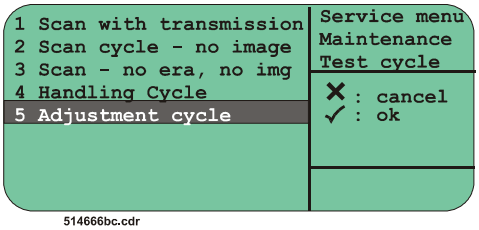
(2) Select
<2 MAINTENANCE>



(3) Select
<3 Test and adjust cycle>

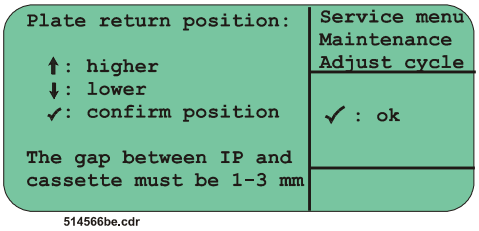


(4) Select
<5 Adjustment cycle>



(5) Start the adjustment cycle by inserting a large format ADC Cassette

(6) The vertical adjustment is done by pressing the arrow keys at the keypad of the digitizer



(7) Check the horizontal position of the IP inside the Cassette by moving the IP carefully by hand while the suction cups are still holding the IP.

The ideal position of the IP is in the middle of the Cassette or with a tendency to the right side of the Cassette (towards the front of the digitizer). Tolerance is 2 mm

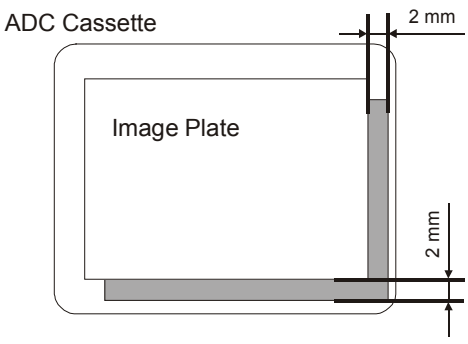


Figure 8

(8) If the IP is not in the right position you have to move the IP stop plate:

- Mark the start position on plate and screw with a vertical line with a permanent marker.
- Movement of the plate is equivalent to the change in position of the IP in the Cassette.

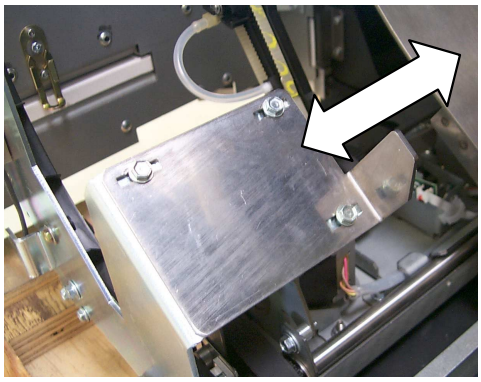
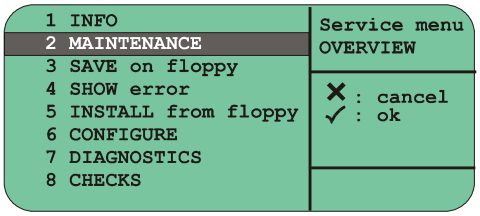
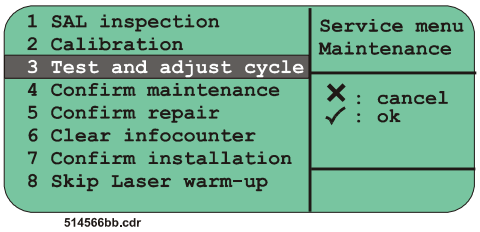


Figure 9

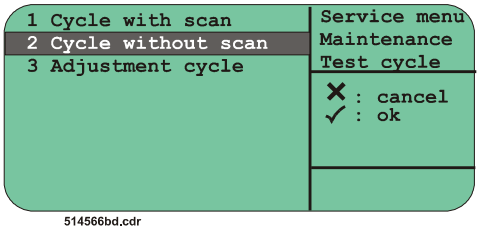
(9) Select
<2 MAINTENANCE>



(10) Select
<3 Test and adjust cycle>



(11) Select
<2 Cycle without scan>



(12) Carry out **two** cycles without changing the adjustment, because the second time the other Cassette Module is picking up the IP.

(13) Check the position of the IP in the cassette.

(14) If the position is **ok**, repeat the procedure **<Cycle without scan>** three times with a cassette format 35 x 43 cm and three times with 18 x 24 cm.

If the position is **not ok**, you have to find a compromise for both units. Move the stop plate corresponding to the IP position but remember, it will also affect the other unit. Redo (12) to (16) until the position is for both units ok (see above).

(15) Create a new backup floppy to save the settings for the vertical adjustment.

3 Optical Adjustments

3.1 Possible Reasons for a Calibration

Symptom	Defect	Solution
Exchange of the optic module	New optic module needs to be adapted to the digitizer	First carry out an IP center calibration and afterwards a shading calibration
Exchange of the BOS sensor (GS626/GS628)	Adjustment of the new sensor needs to be adapted to the digitizer	First carry out an IP center calibration and afterwards a shading calibration
Exchange of the photo multiplier	No power supply New photomultiplier needs to be adapted to the digitizer	• Check connections • Carry out a shading calibration
Exchange of the scan unit	New scan unit can be misadjusted	Check image quality with a flat field: • If the quality is ok, you do not have to carry out any adjustment • If the image has stripes in slow-scan direction, first carry out an IP center calibration and afterwards a shading calibration

Symptom	Defect	Solution
Inhomogeneous images with lines in slow-scan direction	Scan area can be dusty	• Check if there is dust in the scan area and clean it with the scan brush if necessary
	Relation between correction factor and glass fiber can be different	• Check the image quality again and if it is still inhomogeneous, carry out a calibration
Inhomogeneous images with two-dimensional errors	X-ray device causes inhomogeneities	Cannot be solved by an adjustment of the digitizer!

3.2 Preparation of Calibration Procedures

For each calibration procedure you need a copper filter and an erased image plate, which is dry, clean and immaculate. The cassette with the image plate inside should not be identified. If it is identified, an additional confirmation on the display is needed.

- For the **IP center calibration** an exposed cassette with a size smaller than 35 x 43 cm is needed.
- For the **shading calibration** an exposed cassette with 35 x 43 cm size format must be used (for detecting the borders of the IP).

3.2.1 Exposure of the Cassette

The exposure of the cassette is equal for both calibrations:

The cassette must be exposed with 20 µGy in total. To achieve a good evenness of the exposure it is recommended to expose two times with 10 µGy by turning the cassette 180° between the first and the second exposure.

Dose of 10 µGy can be achieved with:

- 7.5 mAs
- 75 kV
- 1.3 m distance
- large focus
- 1.5 mm copper filter

Use a dosimeter to measure the dose!

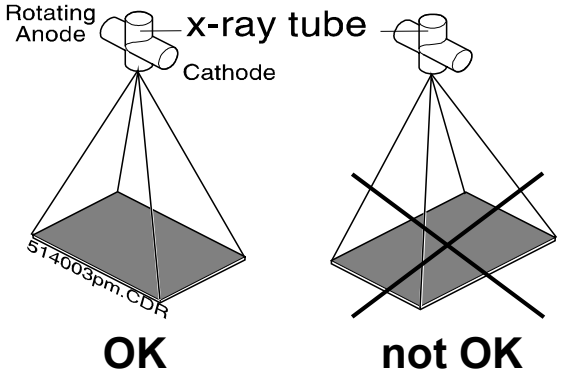


Figure 10

The entire image plate must be fully exposed!
No collimating is needed!

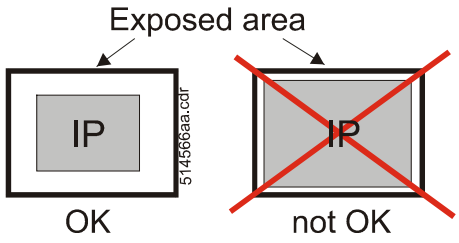


Figure 11

3.3 IP Center Calibration (BOL/BOS Adjustment)

3.3.1 Start IP Center Calibration

(1) Enter the Service menu

(2) Select
<2 MAINTENANCE>

(3) Select
<2 Calibration>

(4) Select
<2 IP center calibration>

(5) Parameters are shown on the display

(6) Insert exposed cassette, select format and the calibration starts automatically

(7) Follow the instructions on the display

3.3.2 Possible Results of the IP Center Calibration

- Calibration successful
- Failure – underexposed!
- Failure – overexposed!
- Calibration failed!
- Big IP used!
- No flat field?!
- Damaged IP edges?!
- Begin of IP not found!
- IP skewed!
- IP-center out of tolerance

3.4 Shading Calibration

3.4.1 Start Shading Calibration Procedure

(1) Enter the Service menu

(2) Select
<2 MAINTENANCE>

(3) Select
<2 Calibration>

(4) Select
<1 Shading Calibration>

(5) Parameters are shown on the display

(6) Insert exposed cassette, select format and the calibration starts automatically

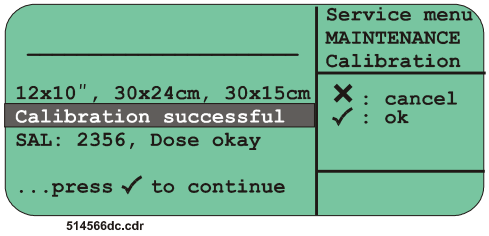
(7) Follow the instructions on the display

3.4.2 Possible Results of the Shading Calibration

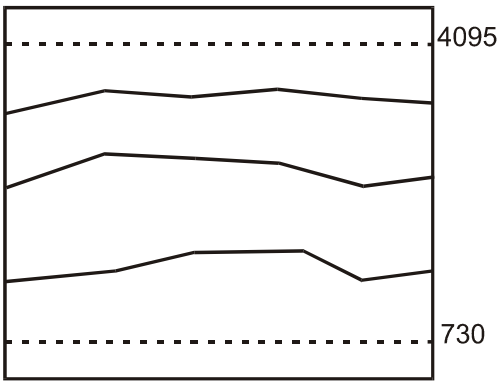
The Scan Average Level (SAL) is the digital value (gray scale) of a pixel and is one of the criteria for a successful calibration. The values during a calibration must be in a range of approximately 730 to 4095 with a 12 bit adjustment.

3.4.2.1 Successful Calibration

(1) Info message pops up and calibration line is stored automatically

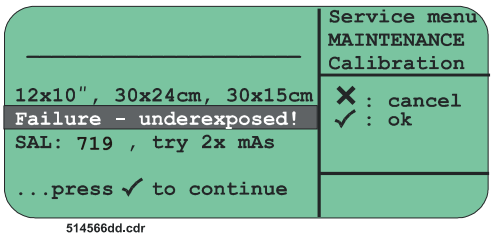


(2) Redo the calibration for the other formats

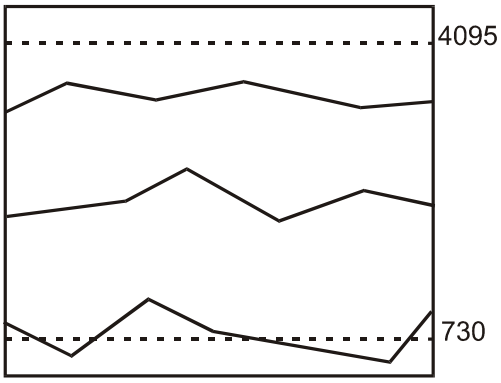


3.4.2.2 Underexposed (SAL_{12bit} < 730)

(1) Failure message pops up



(2) Increase the exposure dose and redo the calibration

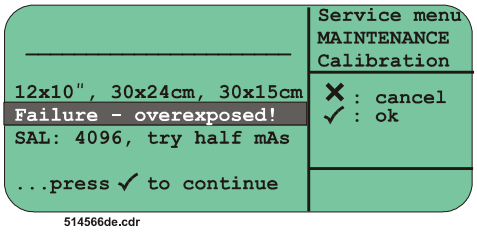


(3) If it is still underexposed check the following digitizer settings:

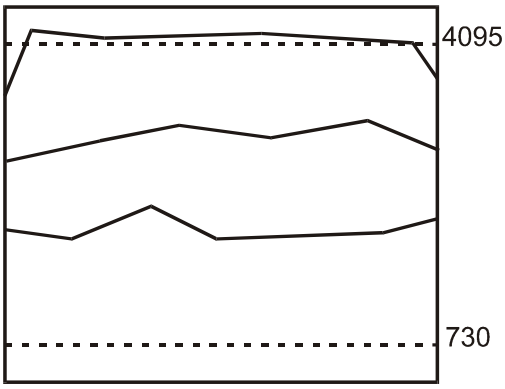
- Correct installation of the photomultiplier floppy after a replacement
- Correct installation of the backup floppy after software installation with formatting boot floppy
- Check content of the nveSCN0 file where the parameters are included. It must contain mfa and mfb values! If these values are equal to default (mfa 2.9 and mfb 0.27) it can be, that the correct values have been lost at a service interaction.

3.4.2.3 Overexposed (SAL_{12bit} > 4094)

(1) Failure message pops up



(2) Reduce the exposure dose and redo the calibration

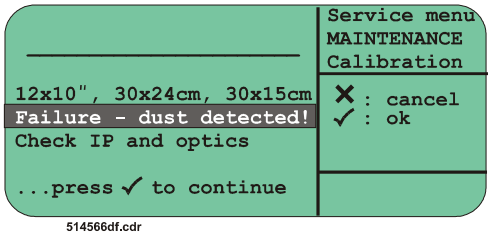


(3) If it is still overexposed check the following digitizer settings:

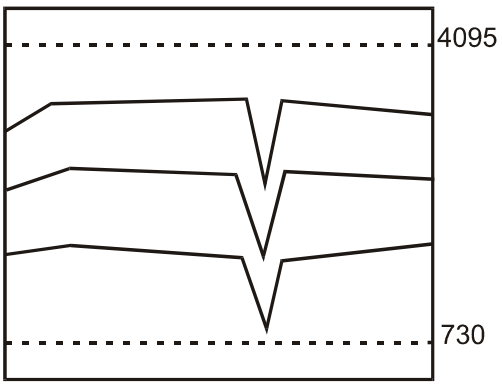
- Correct installation of the photomultiplier floppy after a replacement
- Correct installation of the backup floppy after software installation with formatting boot floppy
- Check content of the file where the parameters are included. It must contain mfa and mfb values! If these values are equal to default (mfa 2.9 and mfb 0.27) it can be, that the correct values have been lost at a service interaction

3.4.2.4 Dust detected

(1) Failure message pops up



(2) Clean the fiber optics with the built-in brush



(3) Check if the exposure was really a flat field

(4) Check the image plate for scratches in slow-scan direction

(5) If none of these actions show success, look at the calibration curves with a browser and analyze the flat field image at the workstation and go on there.

3.4.2.5 Bad IP (too big deviations of the border)

(1) Failure message pops up

(2) Check if the exposure was really a flat field

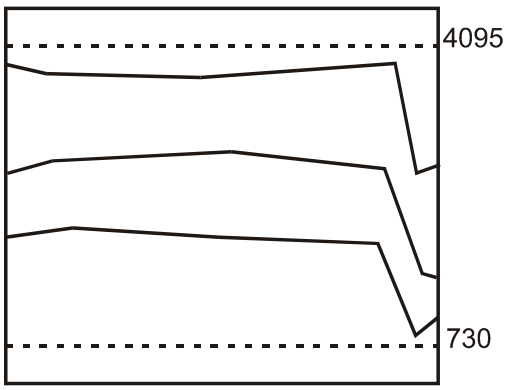
(3) Expose another image plate which is dry, clean and immaculate.

(4) Redo calibration

3.4.2.6 No flat field (dynamic range bigger than 1:2)

(1) Failure message pops up

(2) Check if the exposure was really a flat field



(3) Make sure that the image plate was exposed without collimation

(4) Check the image plate for scratches in slow-scan direction

(5) Redo calibration

3.4.2.7 Skewing (warning)

(1) Failure message pops up

(2) Check if the exposure was really a flat field